Influencing the Moral Dimensions of Professional Practice: Implications for Teaching and Assessing for Research Integrity

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This paper will present implications for teaching and assessing for research integrity from 20 years of experience designing and assessing ethical development in the dental profession. Data sources for the implications include: 1) pretest/posttest data for 18 cohorts of dental students who completed a well-validated ethics program; 2) pre/post assessments of 28 practitioners referred by a licensing Board[1] for individualized ethics instruction because they violated the State Dental Practice Act; and 3) efforts in several professions to influence moral judgment development.

After pointing out some of the features of the Minnesota ethics program, the program's theoretical foundations (e.g., the processes of morality) are described. Each process suggests research questions that motivate inquiry and assessment methods that were developed or used to investigate the research questions and to gather evidence on program effectiveness. The paper continues with a summary of data supporting the independence of the component processes and a discussion of the ongoing search for behavioral indicators that could provide the "acid test" for the model. The paper concludes with a discussion of the implications for the teaching and assessing for research integrity.

Special features[2] of the curriculum include: 1) 43 contact hours distributed over four years; 2) required attendance and participation; 3) small group instruction—using dilemma discussion and role-play; 4) an emphasis on student performance, self-assessment and personalized feedback; 5) use of validated assessment methods that are checked for reliability; 6) involvement of high status professionals (in measurement development and feedback); and 7) involvement of faculty in the teaching. Thus, the curriculum isn't a one-shot intervention, nor is it the isolated property of one instructor.

Theoretical Foundations

The ethics curriculum, for students and referred practitioners, is designed to promote functional processes that give rise to morality: 1) ethical sensitivity; 2) moral reasoning; 3) moral motivation and commitment; and 4) ethical implementation (1). Moral failing is conceptualized as the result of deficiencies in one or more of the processes. Rest's Four Component Model of Morality, operationally defined below, is a substantial departure from much of the work in psychology that arbitrarily divides moral functioning into affects, cognitions, and behaviors (2).

The Four Component Model of Morality

Early in the cognitive developmental research program initiated by Kohlberg, he noted that, in

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addition to moral judgments, other processes were important to the production of moral behavior (3). Rest made these processes more explicit in what he called the Four Component Model of Morality (1). Starting from the question: how does moral behavior come about, Rest suggested that the literature supports at least four component processes, all of which must be activated in order for moral behavior to occur. These include:

1. Moral sensitivity (interpreting the situation as moral)

This process highlights the idea that moral behavior can only occur if the individual codes the situation as moral. Specifically, Component 1 focuses on the various actions that are available and how each action might affect the self and others.

2. Moral judgment (judging which of the available actions are most justified)

This is the process that Kohlberg emphasized. Here the focus is on judging which of the various options are the most ethically justified. Further, the job of a psychologist and educator is in sketching out how the justification process develops and under what conditions these processes inform real-world choices.

3. Moral motivation (prioritizing the moral over other significant concerns)

Less understood than the other processes, the main concern of Component 3 is, "why be moral." The model acknowledges that individuals have a number of legitimate concerns that may not be compatible with the moral choice: for instance, career pressures, established relationships, idiosyncratic personal concerns, among many others. Some of the most notable lapses of ethical behavior in the professions can be attributed to low priority placed on the moral, even when the moral choice is very well understood.

4. Moral character (being able to construct and implement actions that service the moral choice)

Component 4 represents the processes by which one constructs an appropriate course of action, avoids distractions, and maintains the courage to continue.

It is important to notice that the model is not conceived as a linear problem-solving model. For example, moral motivation may impact moral sensitivity, and moral character may constrain moral motivation. In fact, Rest (1) makes clear the interactive nature of the components. Further, the Four Component Model assumes that cognition and affect co-occur in all areas of moral functioning. Thus, moral action is not simply the result of separate affective and cognitive processes operating in interaction, as suggested by traditional models of moral function that focus on three domains—cognitions, affects and behavior (4, 5). Instead, each of the four components are mixes of affective and cognitive processes that contribute to the component's primary function (e.g., identifying a situation as moral). Bebeau, Rest, & Narvaez suggest that researchers focus attention on identifying processes as they contribute to moral action, rather than attempting to understand moral actions from a starting point defined by arbitrarily dividing moral functioning into affect, cognitions, and behavior (2).

The debate on the usefulness of a psychological theory of morality, that has its foundation in the work of Lawrence Kohlberg, is addressed in "Postconventional Moral Thinking" (6). This paper presents a theory of moral judgment development that is not grounded in a particularistic moral theory—as was Kohlberg's—but is grounded in empirical evidence illustrating that as individuals develop, so do the basic understandings they bring to resolving complex moral problems. Such findings are of importance to ethics education in general, as the goal of ethics education is, simply put, to promote ethical development. The authors contend that their findings will be of particular importance to research ethics educators because of their interest in promoting critical thinking about responsible research conduct (6). In the past, ethicists working in the professions questioned the usefulness of a moral development theory (and related measures) that favored a particular moral theory, observing that practitioners working on real problems often developed well-reasoned solutions without regard to a particular theory or even to principlism as a way of arriving at moral judgments (7).

By amending a theory of moral judgment development to make it congruent with advances in moral philosophy, the authors hope to counter current views of the obsolescence of moral psychology and support more interdisciplinary collaboration in the design and evaluation of moral education programs. Further, a more enlightened view of the role of tests of moral judgment development should enable educators

to put such tests to more appropriate use.

Besides drawing attention to a broader conception of postconventional moral thinking, the authors direct the reader's attention to a broader conception of morality, one that encompasses moral judgment, but that also addresses other aspects of moral functioning, including moral sensitivity, motivation, character, and competence. The Four Component Model of Morality has been a centerpiece for research activities at the Center for the Study of Ethical Development for nearly 20 years.

Educational Interventions Assessed in Terms of the Four Components

A program of research and educational development to investigate the usefulness of the model was initiated by Jim Rest and the author in the early 80s. Variations on these research questions motivated the inquiry: Can ethical sensitivity (or any of the other components) be reliably assessed? Do students differ in ethical sensitivity (or other components)? Can sensitivity (or other components) be enhanced? And, is ethical sensitivity distinct from other components?

The Four Component Model offers unique information and direction for educational development. First, it suggests profitable areas for measurement development. To claim that a program is effective in a broad sense, it seems reasonable to expect changes within each of the four components. For the dental curriculum, measures of each component were designed and validated, and data from them helped identify deficiencies to consider as the curriculum was designed. There are measurement models and methods for assessing each of the components (2, 8). These can be used as templates for assessment in various contexts.

Second, the model provided direction for instructional design for groups, as well as for individual referrals. For referred practitioners, deficiencies were noted in various components and were associated with particular moral weaknesses (9). Targeting specific deficiencies in an individualized instructional program proved to be an effective intervention strategy, resulting in substantially enhanced posttest performance.

Measures for the Components of Morality

Five measures are used to assess performance in the Dental Ethics Curriculum. A brief description of each measure and the findings are summarized as follows:

Component I: Ethical Sensitivity

The Dental Ethical Sensitivity Test (DEST)

The DEST (Form A or B) (10, 11) assesses the ability to recognize the ethical issues hidden within the professional problems dentists encounter in practice. Students' verbal responses to four audio-taped dramas are recorded and transcribed, and provided to the student and to a practicing dentist, who each apply the DEST coding scheme, then meet for personalized feedback. The validity and reliability of the DEST are reported in several studies, summarized in Bebeau (8) and Fravel and Bebeau (12). Briefly, the results support these conclusions: 1) Ethical sensitivity can be reliably assessed. Calibrated raters achieved item agreement ranging from 84.7 percent to 88 percent. Reliability estimates for individual cases ranged from .83 to .92; 2) Students and practitioners vary in sensitivity to ethical issues. Students at different levels of education in medicine and dentistry (physicians vs. technicians or dentists vs. hygienists) differed significantly, such that those with longer preparation showed higher levels of sensitivity. Further, the DEST is sensitive to institutional differences; 3) Women have a slight edge over men in recognizing ethical issues, but differences were not attributed to differential recognition of the care and justice issues; 4) Ethical sensitivity can be enhanced through instruction; 5) Ethical sensitivity is distinct from moral reasoning abilities. Correlations between the DEST and Defining Issues Test (DIT) posttest are consistently low (see later section for more detail); 6) Despite the stressful nature of the DEST assessment—responding on the spot to complex cases, having responses taped, transcribed, and sent to a practicing professional is a high-stakes examination—students value the assessment and feedback experience.

Component II: Moral Reasoning and Judgment

In this section, two measures are described: a well-established measure (DIT) and a newly-devised, context-specific test of ethical reasoning and judgment (Dental Ethical Reasoning and Judgment Test [DERJT]). In the case of the DIT,

the discussion will include findings from new analyses with new indices for three of the recent cohorts of dental students.

The Defining Issues Test

The DIT measures life-span development of moral reasoning and judgment (13). The DIT is the most widely used test of moral judgment development and is often used as an outcome measure for intervention studies, because it has an exceptional validation history.[3] Students read dilemmas, and then rate and rank the importance of each of 12 arguments to support their position. Confirmatory factor analysis of a mega-sample of over 44,000 subjects shows that items (arguments) cluster around three general moral schemas: Personal Interest, Maintaining Norms, and Postconventional schemas (14). Typically, researchers have reported scores in terms of the P score—the proportion of items selected that appeal to Postconventional moral frameworks for making decisions. The average adult selects postconventional moral arguments about 40 percent of the time, the average Ph.D. candidate in moral philosophy or political science about 65.2 percent of the time, the average graduate student 53.5, with the average college graduate at 42, and the average high school student at 31.8 percent.

Progress in moral judgment is developmental, and development proceeds as long as an individual is in an environment that stimulates moral thinking. College has a powerful effect on moral judgment development. McNeel's meta analysis of 22 longitudinal studies of liberal arts students estimates first year college students at 36, seniors at 46, estimating an effect size of .80 (15). Effect sizes of about 0.80 are among the largest effect sizes for many college impact variables that have been studied. In fact, effect sizes are higher for moral judgment than for the many cognitive and affective college outcome variables that have been studied (16). Yet professional schools (e.g., Veterinary Medicine, Medicine, Dentistry, and Accounting) are programs where one does not typically see gains associated with the educational program, unless the program has a specially-designed ethics curriculum (17). Further, for some students and some professions, programs actually seem to inhibit growth (18, 19).

Change in moral judgment can be attributed to the ethics curriculum (18). The average entering Minnesota dental student scores 46 (with cohorts ranging from 42 to 49 across the 15 classes tested). The average graduate selects postconventional arguments 51 percent of the time (with cohorts ranging from 47 to 55). Effect sizes vary across classes, with a range of .12 to .78, with an average of .43. For each cohort, scores tend to be normally distributed. For entering students, as many as 35 percent are not using postconventional moral schemas as often as the average adult, with about seven percent above the mean of philosophy and political science graduate students. Although we see an upward shift in the distribution at posttest, with 16 percent lower than the mean of the average adult, and 20 percent above the mean of philosophy and political science graduates; of particular interest are the proportion of students who showed no change or regressed from pretest to posttest. By classifying students' change scores into categories defined by the standard error of measurement (18), Bebeau reported that 44 percent of the 1,229 students who participated in the curriculum made moderate to highly significant gains, 40 percent showed no change, and 16 percent regressed on the P score (20).

New Indices and New Analyses of DIT Scores

Observations of what appeared to be regression in postconventional reasoning in our intervention studies prompted the validation studies, including development of an alternate form of the DIT and a reanalysis of moral education interventions that attended to several moral cognition variables derived from DIT scores (6, 14, 21, 22, 23, 24).

Moral Schema Profiles. Instead of relying only on the P score as a measure of pretest to posttest change, a profile showing the proportion of times a student rates was constructed to illustrate important items for each of three general schema: a Personal Interests schema (Kohlbergian Stage 2 and 3 items); a Maintaining Norms schema (Stage 4 items): and a Postconventional schema (Stage 5 and 6 items). Figure 1 illustrates how two profiles with similar P scores can reflect differing levels of moral judgment development. Examining profiles from students who did not show gains in DIT P scores from pretest to posttest (20) illustrates a substantial reduction on the Personal Interest schema coupled with an increase on the Maintaining Norms schema, without significant change on the Postconventional schema score. In fact, when the statistically significant pretest/posttest change for the 18 cohorts of students that participated in the dental curriculum was

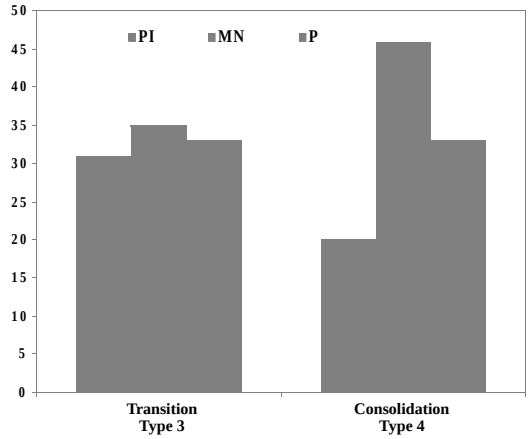

Figure 1. Moral judgment profiles illustrating similar P scores, but differences on other moral cognition variables.
PI = Personal Interests Schema
MN = Maintaining Norms Schema
P = Postconventional Moral Schema

reanalyzed, the reduction in the Personal Interests schema score appeared much greater and more consistent across cohorts than changes in P score. By focusing only on the P score, researchers may be missing change that is quite significant.

Consolidation/Transition. Figure 1 illustrates another variable to consider in describing change. When there is little evidence of discrimination among the schema-typed items, students are classified as transitional. A flat profile is viewed as a marker of developmental disequilibrium, or transition, since there is no evidence of a schema preference. A further discussion of this topic is addressed by Thoma and Rest (22). A pretest/posttest analysis of consolidation/transition status was conducted for 222 dental students (20), showing that nearly half the students (46.9%) were in a transitional status at pretest, whereas only 27.1 percent exhibited the transitional status at posttest.

Type. Profiles can further be classified by type (22), where type reflects both the predominant schema and the extent of its use. By reexamining several intervention studies reported in the literature, Yeap showed that Type provided a more illuminating description of change that occurred as a result of an intervention than relying simply on the P Score (24). A pretest/posttest analysis of six Types was also conducted for the 222 students reported above. Whereas the pretest responses were distributed among Types 3, 4, 5, and 6, 61.2 percent were classified at Types 5 and 6 (postconventional types), with the distribution peaking at Type 6. For the posttest responses, 75.8 percent were classified at Types 5 and 6, with 59.9 percent at Type 6. By way of comparison, Yeap reported college student samples peaked at Type 3.

These new analytical procedures may help to unravel some of the puzzles researchers have cited, where professional groups like Accounting and Auditing (19) seem to regress on moral judgment as a result of an educational program. Such analysis may clarify McNeel's findings that programs that are too careerist (focus narrowly on technicalities of beginning job performance) or too dogmatic (in closing off questioning and inquiry) inhibit growth in reasoning (15). Such findings would have implications for developing research integrity. Courses that focus narrowly on the rules of research conduct may focus attention on the minimal (legal) standards, rather than on aspirational standards for research integrity.

Tests like the DIT are valuable for assessing general reasoning that is a critical element of professional ethical development, but they may not be sensitive to the specific concepts taught in a professional ethics course—or indeed, in a research ethics course. The question (for educators) is often whether to teach specifically to the codes or policy manuals, or to teach concepts particular to a discipline—informed consent, intellectual property, conflict of interest, etc.

The Dental Ethical Reasoning and Judgment Test (DERJT)

The DERJT is a first effort to test application of context-specific concepts (taught in ethics courses) to real cases (25). The test is similar to the DIT, in that cases are presented followed by lists of action choices and justifications. The action and justification choices for each problem were generated by a group of Minnesota dental faculty and residents. The scoring key was developed by a group of "dental ethical experts." When taking the test, a respondent rates each action or justification, then selects the two best and two worst action choices, and the three best and two worst justifications. Scores are determined by calculating the proportion of times a respondent selects action choices and justifications consistent with "expert judgment." In validation studies, Bebeau and Thoma have seen clear expert novice differences (25). Further, scores for students, practitioners, and referrals appear to be normally distributed. In a

study comparing our graduates' responses to familiar vs. unfamiliar problems presented on the test, it appears that a good grasp of postconventional moral schemas is a necessary condition for transfer to new problems.

Component III: Motivation and Commitment

The Professional Role Orientation Inventory (PROI)

The PROI assesses commitment to privilege professional values over personal values (26, 27). Likert scales assess dimensions of professionalism that are theoretically linked to models of professionalism described in the professional ethics literature. The PROI scales, in particular the responsibility and authority scales, have been shown to consistently differentiate beginning and advanced student groups and practitioner groups expected to differ in role concept. By plotting responses of a cohort group on a two dimensional grid, four distinctly different views of professionalism are observed (26) and, if applied, would favor different decisions about the extent of responsibility to others. In comparing practicing dentists with entering students and graduates, our graduates consistently express a significantly greater sense of responsibility to others than entering students and practicing dentists from the region. This finding has been replicated for five cohorts of graduates ($\underline{n} = 379$). Additionally, the graduates' mean score was not significantly different from a group of 48 dentists, who demonstrated special commitment to professionalism by volunteering to participate in a national seminar to train ethics seminar leaders. A recent comparison of pretest/posttest scores for the Classes of 1997-1999 (20) indicates significant change ($p < .0001$) from pretest to posttest. Cross-sectional studies of differences between pre and posttest scores for a comparable dental program suggests that ethics instruction accounts for change.

To provide students or practitioners with individualized feedback on their role concept, an interpretive guide is provided enabling a respondent to sum his or her own scores on each scale, plot them on the two dimensional grid (one grid is provided for the authority and responsibility scales, one for the agency and autonomy scales), and then compare responses to their cohort. Descriptions of each of the models of professionalism are included to stimulate thinking about the model of professionalism that appears to be dominant for the individual. When the scales and interpretive guide are used in an educational setting, participants can compare and discuss items and challenge each other's thinking.

Developing a concept of role appears to require instruction and opportunities for reflection. At entry to professional school, Minnesota dental students do not illustrate a good understanding of key concepts of professionalism like service to society, or the priority of patient well-being, or the duty to self-regulation (8). But, even after participation in an instructional program in which students write an essay describing their perception of their professional role (the program is of demonstrated effectiveness and includes generous amounts of practice and feedback on performance), key concepts like self-regulation, service to society, and the basic duty to place patient's rights before self-interest are still frequently omitted or miscommunicated by as many as 20 percent of the students. The literature on concept learning has helped us see that when students have no functional schema for a particular concept, several educational experiences are required to instill a clear concept of the professional's role.

Whether instilling a clear idea of the professional's role will motivate students to place moral values over personal ones is a key question. The most direct evidence of a relationship between role concept and professionalism comes from the study of performance of the 28 members of the practicing community, referred for courses in dental ethics because of violations of the dental practice act. Although the practitioners varied considerably on measures of ethical sensitivity, reasoning, and ethical implementation, 27 of 28 were unable to clearly articulate role expectations for a professional (9).

Component IV: Moral Implementation (character and competence)

Shifting to the last component, character and competence, the authors have observed that guided practice changes the expectation of efficacy that is likely to change behavior. Role-playing builds competence and confidence in resolving thorny ethical problems, and skills in

communication and negotiation are necessary requisites of this competence.

A Professional Problem Solving Index

Problem-solving and role-playing performance scores are calculated for eight complex cases that present difficult human interaction problems (8, 20). Students are directed to prepare 1) an interpretation of the facts that must be addressed if the problem is to be resolved efficiently; 2) an action plan; and 3) a verbatim dialog to illustrate the implementation of the action plan. A checklist, prepared for each case, assures some uniformity in judging responses. Each response is reviewed by a peer and by the course instructor who provide written comments identifying the strengths and shortcomings of the assignment. As with other measures, scores are normally distributed and cohort differences are observed.

Independence of the Components of Morality

Rest's Four Component Model predicts the independence of the components (1). Prior studies have typically reported low to very low correlations between ethical sensitivity and moral judgment, but correlations among the other components have varied from very low to an occasional moderate correlation. Often sample sizes have been low, challenging the reliability of the estimates. Recently, Bebeau reported correlations between components for a larger sample (230 students) (20). Except for the expected moderate correlations (.46) between the DIT Pretest and Posttest and between the PROI Pretest and Posttest scales (.38), each measure appears to provide unique information about ethical decision making competence. Consistent with earlier studies, correlations are consistently very low between the DEST and the DIT, and between the DEST and other component measures (8). The exception is between the DEST and the DERJT justification score, where there appears to be some overlap between the two tests ($r = .28$). Also consistent with earlier reports (27), there appears to be some low to moderately-low relationship between the PROI Responsibility Scales and the DEST and DIT.

The Continuing Search for Behavioral Indicators

Several attempts have been made to show the contributions of each of the components to meaningful behavioral indicators. Although moral judgment is linked to a wide range of pro-social behaviors (28), including clinical performance ratings for nurses (29, 30), physicians (31) and dentists (8), and to preferences for the more altruistic law disciplines for law students (32), the search for behavioral measures to examine the relative contribution of each component to the behavioral outcomes has been a frustrating one. The author's most recent effort (20) has been to calculate a productivity index that reflects students' success in interacting effectively with patients to achieve acceptance and completion of treatment recommendations. To meet competency requirements, the student must achieve an average monthly index (over all months of clinical practice) of .75 or above. Although there was considerable range in productivity from .67 to 1.19, since students must meet a .75 overall average in order to graduate, the productivity index, while identifying highly effective students, also produces a highly skewed distribution (Mean = .80, S.D. = .08). In the analysis, productivity, like Grade Point Average, was not related to any of the measures of morality.

The explanatory power of the Four Component Model is observed, taking a somewhat different approach, i.e., working backward from disciplinary action to examining deficiencies in the components. Baldwin observed a relationship between the number of malpractice claims and moral judgment scores, noting that a high DIT score had a kind of protective effect, insulating one from claims (33). For dental practitioners referred for ethics instruction, disciplinary actions were directly tied to significant deficits in one or more of the components (8, 9). Further, one consistent observation, in addition to a deficiency in either sensitivity, reasoning or implementation, is the difficulty 27 of the 28 referrals had in articulating the expectations of the profession. After targeted instruction, directed toward role concept development and remediation of one or more other deficiencies, we observed measurable improvements in performance, coupled with documented changes in the behaviors that gave rise to the disciplinary action. Further, to date, there have been no cases of recidivism.[4] Examining case studies bolsters the understanding of the connection between the components and behavior, and provides direction for education.

Conclusions

Analyzing data from the sources cited indicates: 1) striking individual differences among students and practicing professionals on each of the measures; 2) that competence on one of the processes does not predict competence on another; 3) that curricula of rather modest duration can influence performance in measurable ways (our curriculum consists of 43 contact hours); and 4) that strengths and weaknesses in each of the processes are linked to real-life ethical behavior. The findings described in this paper support Rest's contention that moral failings can result from deficiencies in one or more of the processes. Findings also support the importance of attending to each when designing curriculum. Further, whether a curriculum promotes ethical development depends on whether that curriculum incorporates the elements of effective instruction.

Implications for Teaching and Assessing for Research Integrity

If the objective is to develop thoughtful and responsible scientists who act with integrity and have broad understanding of their role and a commitment to integrity in science, it is important to do more than teach the rules and policies that apply to the conduct of research. Before engaging in case discussions, research ethics teachers need to address the expectations of a scientist. Students cannot be expected to intuit the norms and values that undergird the research enterprise. And, it is not clear that they can "pick them up" from role models. The expectations need to be explicitly taught and formally assessed, preferably in writing. By asking students to express the concepts in their own words, and in writing, misperceptions can be identified and addressed before they become an issue. Once the expectations of the scientist are clear, engage students in active learning (using cases, if possible) to facilitate ethical sensitivity, reasoning and problem solving. When designing case materials, careful thought should be given to the particular process that is of concern. Too often, cases are written and participants are asked: What should the protagonist do? Such a question focuses on problem solving, rather than problem identification or moral reasoning. Certainly a skilled facilitator can redirect attention to reasoning or problem identification, but it is sometimes much more difficult.

The author's experience suggests that for novice ethics teachers (which most of us are) focusing on sensitivity, reasoning, and role concept independently of one another will more efficiently develop the skill needed for effective problem solving. Ethics teachers should not expect that carefully targeted courses will develop the more advanced skills in ethical reasoning that might result from courses in moral philosophy. Yet, problem-based practice (using cases) can be especially effective in helping students recognize and subsequently avoid personal interest arguments while strengthening awareness and adherence to the rules of responsible research conduct.

Notes

1. The referrals from the State Board came about because some of the Board members have been involved in the undergraduate curriculum for students. They wondered whether violations of the Dental Practice Act reflected ethical deficiencies that could be remediated by the kinds of experiences we provided for students.
2. For a detailed account of the undergraduate dental ethics curriculum, see Bebeau (1994).
3. There is extensive literature on the construct validity of the DIT. See Rest, Narvaez, Bebeau, & Thoma (1999) for a summary and references to the 400 published studies using the DIT.
4. It is important to note that none of the practitioners referred for remediation involved problems with impulse control, substance abuse, mental illness, or significant personality disorders.

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